

INJ. PUMP CALIBRATION DATA

ENGINE MODEL GD320, GD410

BOSCH No. 9 443 610 061
 DKKC No. 104135 - 1000
 Date: 10, April, 1989
 Company: HONDA
 No. 16300-ZG3-003

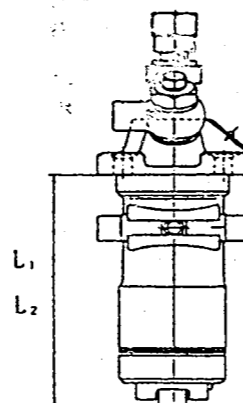
INJ. Pump Ass'y No. 104135 - 1000 (NP - PFR1KX60/1NP1)

1. Test Conditions :

- Nozzle & Nozzle Holder Ass'y No. : 105780 - 8190
 Nozzle No. : 105780 - 0060 (Bosch Type No. DNQSD1510)
 Nozzle Holder No. : 105780 - 2150
 Nozzle Opening Press. : $133 + 3$ Kg/cm² Transfer Pump Press. : 0.5 Kg/cm²
 Injection Pipe No. : 157805 - 3320
 Inner Dia. 2 mm × Outer Dia. 6 mm — Length 600 mm
 Test Oil : ISO4113 or SAE Standard Test Oil (SAE J967d) Oil Temp. : 35⁺¹⁰ °C
 Cam Profile : PFK - T - 00 (Tangential Cam , Cam Lift 7 mm , Base Circle ϕ 28)

2. Injection Timing :

- PRE-STROKE : 3.2 ± 0.05 mm
 L₁ (Port Closing Dimension) : 72.8 ± 0.05 mm
 L₂ (Mounting Dimension) : 76.0 ± 0.05 mm



3. Injection Quantity :

Rod Position (mm)	Pump Speed (r.p.m)	Injection Q'ty (cc/1000 strokes)	Max. var bet. cyl (%)	Fixed	Remarks
10.7 ± 1.0	1800	24.1 ~ 25.9		Rod	Basic

() = Reference value

4. Control Rod Sliding Resistance :

Pump Speed (r.p.m)	Sliding Resistance (g)
0	Below 50
200	Below 30
1,000	Below 20



DIESEL KIKI

DIESEL KIKI CO., LTD. 3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN
 Service Department Tel. (03) 400-1551 Fax: (03) 499-4115

INJ. PUMP CALIBRATION DATA

TEST OIL: ENGINE MODEL : NEW HA
 ISO 4113 or
 SAE J967d

BOSCH No. 9 460 610 339

DKKC No. 104740-0333

Date : 10, April 1989 0

Company : MAZDA

No. SE55 13 800A

Injection pump No.: 104640-0353 [NP-VE4/10F1900RNP281]
 Pump rotation : Clockwise-viewed from drive side

For Test Condition see
 Microfiche No. WP-210 (N-16)

1. Test Conditions

1-1 Nozzle : 105780-0000 (NP-DN12SD12T)	1-4 Injection pipe : 2 x 3 x 840 mm
1-2 Nozzle holder : 105780-2080 (EF8511/9)	1-5 Fuel oil temperature : 45 ^{±5} °C
1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ²	1-6 Supply pump pressure : 0.2 kg/cm ²

2. Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,500	5.0 ~ 5.4 (mm)		
2-2 Supply pump pressure	1,500	5.7 ~ 6.3 (kg/cm ²)		
2-3 Full load delivery	1,000	53.1 ~ 54.1 (cc/1,000st)		3.5
Full load delivery		(cc/1,000st)		
2-4 Idle speed regulation	350	10.8 ~ 14.8 (cc/1,000st)		2.5
2-5 Start	100	Above 78.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,100	19.1 ~ 25.1 (cc/1,000st)		5.5
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm	1,000	1,500	1,900
	mm	1.6 ~ 2.8	4.9 ~ 5.5	7.0 ~ 8.2
3-2 Supply pump	N = rpm	500	1,500	1,900
	kg/cm ²	2.3 ~ 2.9	5.7 ~ 6.3	7.1 ~ 7.7
3-3 Overflow delivery	N = rpm	1,000		
	cc/10s	53.0 ~ 97.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. speed	1,000	52.6 ~ 54.6		
	500	45.6 ~ 49.6		
	1,500	50.3 ~ 54.3		
	1,900	46.4 ~ 50.4		
	2,100	19.1 ~ 25.1		
	2,200	Below 6.0		
Switch OFF Magnet valve	350	0		
Idling	350	10.8 ~ 14.8		
	Below 620	0		

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.7 ~ 1.9	mm
BCS	—	mm
Pre-stroke	0.18 ~ 0.22	mm
Control lever angle		
α	18.0° ~ 22.0°	deg
A	35.9 ~ 38.6	mm
β	33.0° ~ 43.0°	deg
B	10.2 ~ 13.9	mm
γ	—	deg
C	—	mm

INJ. PUMP CALIBRATION DATA

TEST OIL: ISO 4113 or SAE J967d
ENGINE MODEL : 4FC1-T

BOSCH No. 9 460 610 354 1/2

DKKC No. 104740-1750

Date : 10, April 1989 [0]

Company : ISUZU

No. 894362 0790

Injection pump No.: 104640-1730 [NP-VE4/10F2250RNP272]
Pump rotation : Clockwise-viewed from drive side

For Test Condition see
Microfiche No. WP-210 (N-16)

1. Test Conditions

- | | |
|--|---|
| 1-1 Nozzle : 105780-0000 (NP-DN12SD12T) | 1-4 Injection pipe : 2 x 6 x 840 mm |
| 1-2 Nozzle holder : 105780-2080 (EF8511/9) | 1-5 Fuel oil temperature : 45 ^{±5} °C |
| 1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ² | 1-6 Supply pump pressure : 0.2 kg/cm ² |

2. Setting

No.	Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1	Timing device travel	1,250	2.7 ~ 3.1 (mm)	0	
2-2	Supply pump pressure	1,250	4.3 ~ 4.7 (kg/cm ²)	0	
2-3	Full load delivery	1,250	46.0 ~ 47.0 (cc/1,000st)	470 ~ 490	4.0
	Full load delivery	900	38.5 ~ 39.5 (cc/1,000st)	256 ~ 276	3.0
2-4	Idle speed regulation	330	9.6 ~ 13.6 (cc/1,000st)	0	2.0
2-5	Start	100	50.0 ~ 70.0 (cc/1,000st)	0	
2-6	Full-load speed regulation	2,600	18.0 ~ 24.0 (cc/1,000st)	470 ~ 490	6.5
2-7					
2-8					
2-9					

3. Test Specifications

No.	Item	N = rpm	mm	kg/cm ²	cc/10s
3-1	Timing device	610 ~ 810	0.5	2.6 ~ 3.2	45.0 ~ 88.0
		900	0.8 ~ 1.8	4.3 ~ 4.7	2.250
3-2	Supply pump	600	1,250	7.1 ~ 7.7	
		1,250			
3-3	Overflow delivery	1,250			

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,250	45.5 ~ 47.5	470 ~ 490	
	1,250	28.4 ~ 33.4	0	
	600	28.2 ~ 32.2	0	
	900	38.0 ~ 40.0	256 ~ 276	
	2,250	35.4 ~ 40.4	470 ~ 490	
	2,600	17.5 ~ 24.5	470 ~ 490	
	2,850	Below 5.0	470 ~ 490	
Switch OFF Magnet valve	330	0		
Idling	330	9.6 ~ 13.6	0	
	420	Below 3.0	0	

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.1 ~ 1.3	mm
BCS	4.5 ~ 4.7	mm
Pre-stroke	—	mm
Control lever angle		
α	-24.5 ~ -16.5	deg
A	10.1 ~ 12.7	mm
β	38.0 ~ 48.0	deg
B	12.2 ~ 15.5	mm
γ	—	deg
C	—	mm

○ Note

- After adjustment of full load fuel injection quantity (1,250 rpm, 46.0 ~ 47.0 cc/1,000st), set the boost pressure at 266 mmHg or 0.36 kg/cm², and at a pump speed of 900 rpm adjust the fuel injection quantity using the BCS spring set screw.

INJ. PUMP CALIBRATION DATA

TEST OIL: IS O 4113 or SAE J967d
ENGINE MODEL : SD25

BOSCH No. 9 460 610 337

DKKC No. 104740-4733

Date : 10, April 1989

Company : NISSAN DIESEL

No. 16700 10H04

Injection pump No.: 104640-4732 [NP-VE4/10F1200RNP371]
Pump rotation : Clockwise-viewed from drive side

For Test Condition see
Microfiche No. WP-210 (N-16)

1. Test Conditions

1-1 Nozzle : 105780-0000 (NP-DN12SD12T)	1-4 Injection pipe : 2 x 6 x 840 mm
1-2 Nozzle holder : 105780-2080 (EF8511/9)	1-5 Fuel oil temperature : 45 ^{±5} °C
1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ²	1-6 Supply pump pressure : 0.2 kg/cm ²

2. Setting		Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1	Timing device travel	900	1.7 ~ 2.1 (mm)	3.5	3.0
2-2	Supply pump pressure	900	4.1 ~ 4.5 (kg/cm ²)		
2-3	Full load delivery	900	36.7 ~ 37.7 (cc/1,000st)		
	Full load delivery		(cc/1,000st)		
2-4	Idle speed regulation	350	8.0 ~ 12.0 (cc/1,000st)		
2-5	Start	100	45.0 ~ 80.0 (cc/1,000st)		
2-6	Full-load speed regulation	1,400	9.1 ~ 15.1 (cc/1,000st)		
2-7					
2-8					
2-9					

3. Test Specifications

3-1 Timing device	N = rpm	900	1,200	1,450
	mm	1.6 ~ 2.2	2.7 ~ 3.9	3.5 ~ 4.7
3-2 Supply pump	N = rpm	900	1,200	
	kg/cm ²	4.0 ~ 4.6	4.8 ~ 5.4	
3-3 Overflow delivery	N = rpm	900		
	cc/10s	42.0 ~ 85.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. speed	900	36.2 ~ 38.2		
	600	33.2 ~ 37.2		
	1,200	38.0 ~ 42.2		
	1,400	8.6 ~ 15.6		
	1,500	Below 3.0		
Switch OFF Magnet valve	350	0		
Idling	350	8.0 ~ 12.0		
	400	Below 3.0		

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	0.9 ~ 1.1	mm
BCS	—	mm
Pre-stroke	0.26 ~ 0.30	mm

Control lever angle

a	21° ~ 29°	deg
A	4.0 ~ 9.2	mm
β	37° ~ 47°	deg
B	10.7 ~ 14.8	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V



DIESEL KIKI CO., LTD.
Service Department

3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN
Tel. (03)5485-4135 · Fax: (03)797-6069

INJ. PUMP CALIBRATION DATA

TEST OIL: ENGINE MODEL : TD27-T
 I S O 4113 or
 S A E J967d

BOSCH No. 9 460 610 350 1/2
 DKKC No. 104740-7112
 Date : 10, April 1989
 Company : NISSAN DIESEL
 No. 16700 80G07

Injection pump No.: 104640-7112 [NP-VE4/10F2050RNP750]
 Pump rotation : Clockwise-viewed from Drive side

For Test Condition see
 Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105/80-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150^{±5} kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45^{±5} °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)	
2-1 Timing device travel	1,100	S/T ON: 4.0 - 4.8 (mm) OFF: 2.1 - 2.5	410 - 430	3.0	
2-2 Supply pump pressure	1,100	S/T ON: 5.6 - 6.4 (kg/cm ²) OFF: 4.0 - 4.6	410 - 430		
2-3 Full load delivery	1,100	61.8 ~ 62.8 (cc/1,000st)	410 ~ 430		
Full load delivery	850	58.4 ~ 59.4 (cc/1,000st)	240 ~ 260		
2-4 Idle speed regulation	375	6.4 ~ 10.4 (cc/1,000st)	0		2.0
2-5 Start	100	45.0 ~ 80.0 (cc/1,000st)	0		
2-6 Full-load speed regulation	2,250	40.8 ~ 44.8 (cc/1,000st)	410 ~ 430		
2-7					
2-8					
2-9		S/T: Solenoid timer			

3. Test Specifications	Solenoid Timer	ON			OFF		
		N = rpm	mm	cc/100st	N = rpm	mm	cc/100st
3-1 Timing device		1,100	3.9 ~ 4.9	1,100	1,700	2,500	2.0 ~ 2.6 4.2 ~ 5.2 6.4 ~ 7.4
3-2 Supply pump		1,100	5.6 ~ 6.4 7.4 ~ 8.2	1,100	1,700	4.0 ~ 4.6 5.8 ~ 6.4	
3-3 Overflow delivery		1,100	43.0 ~ 87.0	1,100 (without O-ring) 60 ~ 103			

3-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. speed	1,100	61.3 ~ 63.3	410 ~ 430	
	1,100	47.0 ~ 52.0	0	
	850	57.9 ~ 59.9	240 ~ 260	
	2,000	50.8 ~ 55.8	410 ~ 430	
	2,150	47.5 ~ 53.5	410 ~ 430	
	2,250	40.3 ~ 45.3	410 ~ 430	
	2,500	11.9 ~ 20.9	410 ~ 430	
	2,700	Below 3.0	410 ~ 430	
Switch OFF Magnet valve	375	0	0	
Idling	375	6.4 ~ 10.4		
	450	Below 5.0		

4. Dimensions		
K	3.2 ~ 3.7	mm
KF	5.7 ~ 5.9	mm
MS	0.8 ~ 1.0	mm
BCS	3.4 ~ 3.6	mm
Pre-stroke	—	mm
Control lever angle		
α	6.0 ~ 14.0	deg
A	4.0 ~ 9.2	mm
β	31.0 ~ 41.0	deg
B	8.8 ~ 12.8	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

○ Note

- If there is no designation in the specifications for the Solenoid Timer's ON-OFF position, then the position should be regarded as OFF.
- When confirming timing device travel and supply pump pressure characteristics, apply boost pressure of 410 ~ 430 mmHg to the boost chamber.

■ POTENTIOMETER ADJUSTMENT

Under the following conditions, alter the potentiometer's installation position so that the out-put voltage equals the specified value.

Adjustment Conditions			Specified Value	Remarks
Control lever position	Pump speed (rpm)	Fuel injection quantity (cc/1000st)	Out-put voltage (V)	
Measure	750	17.8 ± 1.0	4.0 ± 0.03	Adjusting point
Idle	—	—	—	Check point
Full speed	—	—	—	Check point

[In-put Voltage: 10V]



DIESEL KIKI CO., LTD.
 Service Department

3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN
 Tel: (03)5485-4135 Fax: (03)797-6069

INJ. PUMP CALIBRATION DATA

TEST OIL: IS O 4113 or SAE J967d
ENGINE MODEL : TD25

BOSCH No. 9 460 610 351 1/3
DKKC No. 104740-7230
Date : 10, April 1989
Company : NISSAN DIESEL
No. 16700 30N07

Injection pump No.: 104640-7230 [NP-VE4/10F2150RNP799]
Pump rotation : Clockwise-viewed from drive side

For Test Condition see
Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105780-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150^{±5} kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45^{±5} °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting

	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,100	S/T ON: 3.8 - 4.7 (mm) OFF: 2.4 - 2.8	S/T: Solenoid timer	
2-2 Supply pump pressure	1,100	S/T ON: 4.8 - 5.6 (kg/cm ²) OFF: 3.8 - 4.4		
2-3 Full load delivery	1,100	48.0 - 49.0 (cc/1,000st)		3.0
2-4 Idle speed regulation	350	4.5 - 8.5 (cc/1,000st)		2.0
2-5 Start	100	45.0 - 80.0 (cc/1,000st)		
2-6 Full-load speed regulation	1,100	10.1 - 14.1 (cc/1,000st)		
2-7 Load-timer Adjustment	1,100	T-0.7 ± 0.2 (mm)		
2-8				
2-9				

3. Test Specifications

Solenoid Timer	ON		OFF			
	N = rpm	mm	1,100	1,700	2,300	
3-1 Timing device		3.8 - 4.8	5.7 - 7.3	2.3 - 2.9	4.3 - 5.5	6.0 - 7.0
3-2 Supply pump	N = rpm	1,100	1,700	1,100	1,700	2,150
	kg/cm ²	4.8 - 5.6	6.2 - 7.0	3.8 - 4.4	5.2 - 5.8	6.1 - 6.7
3-3 Overflow delivery	N = rpm	1,100	1,100 (without O-ring)			
	cc/10s	43.0 - 87.0	60 - 103			

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,100	47.5 - 49.5		
	600	45.1 - 49.1		
	2,150	38.5 - 42.7		
	2,300	28.3 - 37.3		
	2,500	9.6 - 14.6		
	2,700	Below 5.0		
Switch OFF Magnet valve	350	0		
Idling	350	4.5 - 8.5		
	450	Below 3.0		

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 - 14V

4. Dimensions

K	3.2 - 3.4	mm
KF	5.7 - 5.9	mm
MS	0.9 - 1.1	mm
BCS	-	mm
Pre-stroke	-	mm
Control lever angle		
a	35.4 - 43.4	deg
Ya	24.3 - 28.7	mm
β	31.0 - 41.0	deg
B	9.3 - 12.9	mm
γ	-	deg
C	-	mm

○ Note

■ If there is no designation in the specifications for the Solenoid Timer's ON-OFF position, then the position should be regarded as OFF.

LOAD TIMER ADJUSTMENT

1) Adjustment

① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : - mmHg

Pump Speed : 1,100 rpm

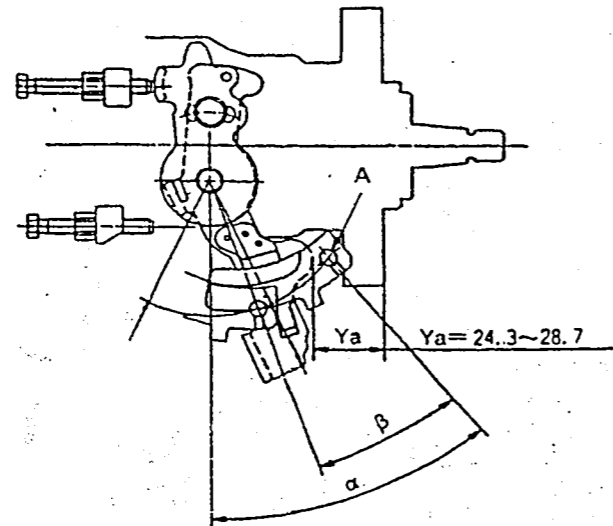
Fuel Injection : 39.0 ± 0.5 cc/1000st
Quantity

② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values (item 2 - 7).

Control lever position			Specified Values	
Pump Speed (rpm)	Fuel Injection Quantity (cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1,100	39.0 ± 1.0	-	-	0.7 ± 0.2
1,100	30.0 ± 2.5	-	-	1.4 ± 0.5

■ Control Lever Angle Measurement Position

① Measure the control lever angles (α , β , γ) at hole A.



INJ. PUMP CALIBRATION DATA

TEST OIL: ISO 4113 or SAE J967d
ENGINE MODEL : TD25

BOSCH No. 9 460 610 352 1/2
DKKC No. 104740-7240
Date : 10, April 1989
Company : NISSAN DIESEL
No. 16700 30N08

Injection pump No.: 104640-7240 [NP-VE4/10F2150RNP800]
Pump rotation : Clockwise-viewed from drive side

For Test Condition see Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105780-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150^{+5} kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45^{±5} °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting

	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,100	S/T ON: 3.9 - 4.7 (mm) OFF: 2.4 - 2.8	S/T: Solenoid timer	
2-2 Supply pump pressure	1,100	S/T ON: 4.5 - 5.3 (kg/cm ²) OFF: 3.5 - 4.1		
2-3 Full load delivery	1,100	48.0 ~ 49.0 (cc/1,000st)		3.0
2-4 Idle speed regulation	350	4.5 ~ 8.5 (cc/1,000st)		2.0
2-5 Start	100	45.0 ~ 80.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,500	10.1 ~ 14.1 (cc/1,000st)		
2-7				
2-8				
2-9				

3. Test Specifications

	Solenoid Timer	ON		OFF			
		N = rpm	mm	1,100	1,700	2,300	
3-1 Timing device			3.8 ~ 4.8	2.3 ~ 2.9	4.3 ~ 5.5	6.0 ~ 7.0	
3-2 Supply pump	N = rpm	kg/cm ²	4.5 ~ 5.3	5.9 ~ 6.7	1,100	1,700	2,150
					3.5 ~ 4.1	4.9 ~ 5.5	5.8 ~ 6.4
3-3 Overflow delivery	N = rpm	1,100	1,100 (without O-ring)				
	cc/10s	43.0 ~ 87.0	60 ~ 103				

3-4 Fuel injection quantities

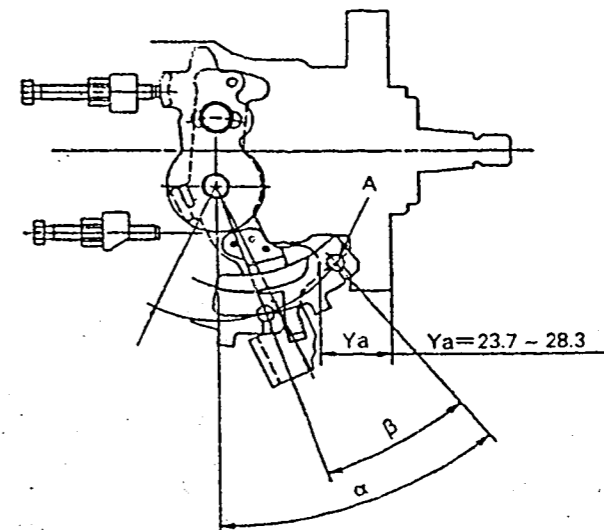
Speed-control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,100	47.5 ~ 49.5		
	600	45.1 ~ 49.1		
	2,150	38.5 ~ 42.7		
	2,300	28.3 ~ 37.3		
	2,500	9.6 ~ 14.6		
	2,700	Below 5.0		
Switch OFF Magnet valve	350	0		
Idling	350	4.5 ~ 8.5		
	450	Below 3.0		
3-5 Solenoid	Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V			

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	0.9 ~ 1.1	mm
BCS	—	mm
Pre-stroke	—	mm
Control lever angle		
α	50.0 ~ 58.0	deg
Ya	23.7 ~ 28.3	mm
β	37.0 ~ 47.0	deg
B	10.7 ~ 14.8	mm
γ	—	deg
C	—	mm

Control Lever Angle Measurement Position

- ① Measure the control lever angles (α , β , γ) at hole A.



Note

- If there is no designation in the specifications for the Solenoid Timer's ON-OFF position, then the position should be regarded as OFF.

INJ. PUMP CALIBRATION DATA

TEST OIL: I S O 4113 or S A E J967d
ENGINE MODEL : TD27

BOSCH No. 9 460 610 343 1/2
DKKC No. 104740-9723
Date : 10, April 1989
Company : NISSAN DIESEL
No. 16700 21N01

Injection pump No.: 104640-9722 [NP-VE4/10F2150RNP605]
Pump rotation : Clockwise-viewed from drive side

For Test Condition see
Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105780-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150^{+5} kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45^{+5} °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,100	S/T ON: 3.9 - 4.7 (mm) OFF: 2.4 - 2.8	S/T: Solenoid timer	
2-2 Supply pump pressure	1,100	S/T ON: 4.5 - 5.3 (kg/cm ²) OFF: 3.5 - 4.1		
2-3 Full load delivery	1,100	51.7 ~ 52.7 (cc/1,000st)		3.0
2-4 Idle speed regulation	400	5.3 ~ 9.3 (cc/1,000st)		2.0
2-5 Start	100	45.0 ~ 80.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,350	31.0 ~ 35.0 (cc/1,000st)		
2-7				
2-8				
2-9				

3. Test Specifications	Solenoid Timer	ON	OFF
3-1 Timing device	N = rpm mm	1,100 3.8 ~ 4.8	1,100 1,700 2,550 2.3 ~ 2.9 4.3 ~ 5.5 6.8 ~ 7.8
3-2 Supply pump	N = rpm kg/cm ²	1,100 1,700 4.5 ~ 5.3 5.9 ~ 6.7	1,100 1,700 2,150 3.5 ~ 4.1 4.9 ~ 5.5 5.8 ~ 6.4
3-3 Overflow delivery	N = rpm cc/10s	1,100 (S/T: ON) 43.0 ~ 87.0	1,100 (S/T: ON without O-ring) 60 ~ 103

3-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,100	51.2 ~ 53.2		
	600	50.8 ~ 54.8		
	2,150	40.8 ~ 45.0		
	2,350	30.5 ~ 35.5		
	2,550	5.6 ~ 14.6		
	2,700	Below 5.0		
Switch OFF Magnet valve	400	0		
Idling	400	5.3 ~ 9.3		
	500	Below 3.0		

4. Dimensions

K	3.2 ~ 3.7	mm
KF	5.7 ~ 5.9	mm
MS	0.8 ~ 1.0	mm
BCS	—	mm
Pre-stroke	—	mm
Control lever angle		
α	35.5 ~ 43.5	deg
Ya	24.3 ~ 28.7	mm
β	31.0 ~ 41.0	deg
B	9.3 ~ 12.9	mm
γ	—	deg
C	—	mm

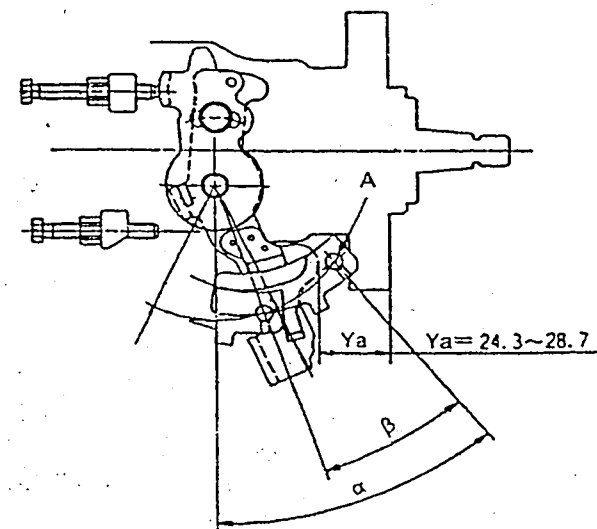
3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

○ Note

■ If there is no designation in the specifications for the Solenoid Timer's ON-OFF position, then the position should be regarded as OFF.

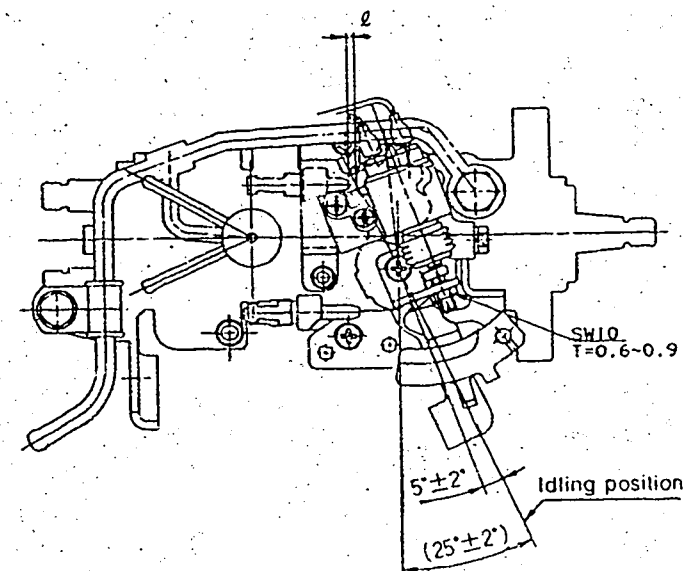
■ Control Lever Angle Measurement Position

① Measure the control lever angles (α , β , γ) at hole A.



■ Accelerator Switch Adjustment

1. Insert a block gauge of 3.3 ± 0.13 mm (ℓ) thickness between the idling stopper bolt and the control lever.
2. Then, adjust the installation position of the accelerator switch so that it is turned OFF.



INJ. PUMP CALIBRATION DATA

TEST OIL: IS O 4113 or S A E J967d
ENGINE MODEL : TD23

BOSCH No. 9 460 610 341 1/2
DKKC No. 104740-9850
Date : 10, April 1989 [1]
Company : NISSAN DIESEL
No. 16700 02N74

Injection pump No.: 104640-9840 [NP-VE4/10F2150RNP656]
Pump rotation : Clockwise-viewed from drive side

For Test Condition see
Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105780-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150⁺⁵ kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45⁺⁵ °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting

	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,100	2.3 ~ 2.7 (mm)		
2-2 Supply pump pressure	1,100	3.5 ~ 4.1 (kg/cm ²)		
2-3 Full load delivery	1,100	44.1 ~ 45.1 (cc/1,000st)		3.0
2-4 Idle speed regulation	350	4.5 ~ 8.5 (cc/1,000st)		2.0
2-5 Start	100	45.0 ~ 80.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,350	28.3 ~ 32.3 (cc/1,000st)		
2-7				
2-8				
2-9				

3. Test Specifications

	Solenoid Timer	OFF			ON
		N = rpm	1,100	1,700	2,550
3-1 Timing device	mm	2.2 ~ 2.8	4.1 ~ 5.1	6.4 ~ 7.4	3.7 ~ 4.7
3-2 Supply pump	kg/cm ²	3.5 ~ 4.1	4.9 ~ 5.5	5.8 ~ 6.4	
3-3 Overflow delivery	cc/10s	43.0 ~ 87.0	(Solenoid timer: ON)		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,100	43.6 ~ 45.6		
	600	41.5 ~ 45.5		
	2,150	35.9 ~ 40.1		
	2,350	27.8 ~ 32.8		
	2,550	5.3 ~ 12.4		
	2,700	Below 5.0		
Switch OFF Magnet valve	350	0		
Idling	350	4.5 ~ 8.5		
	450	Below 2.0		

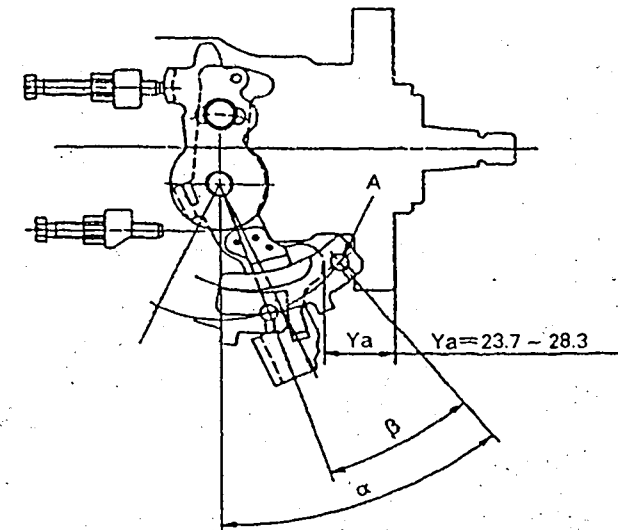
4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	0.9 ~ 1.1	mm
BCS	—	mm
Pre-stroke	—	mm
Control-lever angle		
α	50.0 ~ 58.0	deg
Ya	23.7 ~ 28.3	mm
β	37.0 ~ 47.0	deg
B	10.7 ~ 14.8	mm
γ	—	deg
C	—	mm

3-5 Solenoid, Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

■ Control Lever Angle Measurement Position

① Measure the control lever angles (α , β , γ) at hole A.



○ Note

■ If there is no designation in the specifications for the Solenoid Timer's ON-OFF position, then the position should be regarded as OFF.

INJ. PUMP CALIBRATION DATA

TEST OIL: I S O 4113 or S A E J967d
 ENGINE MODEL : TD27

BOSCH No. 9 460 610 344 1/2
 DKKC No. 104740-9930
 Date : 10, April 1989 0
 Company : NISSAN DIESEL
 No. 16700 31N01

Injection pump No.: 104640-9930 [NP-VE4/10F2150RNP710]
 Pump rotation : Clockwise-viewed from drive side

For Test Condition see
 Microfiche No. WP-210 (N-16)

1. Test Conditions

- | | |
|--|---|
| 1-1 Nozzle : 105780-0000 (NP-DN12SD12T) | 1-4 Injection pipe : 2 x 6 x 840 mm |
| 1-2 Nozzle holder : 105780-2080 (EF8511/9) | 1-5 Fuel oil temperature : 45 ^{±5} °C |
| 1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ² | 1-6 Supply pump pressure : 0.2 kg/cm ² |

2. Setting

2. Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,100	S/T ON : 3.9 - 4.7 (mm) OFF : 2.4 - 2.8	S/T: Solenoid timer	3.0
2-2 Supply pump pressure	1,100	S/T ON : 4.5 - 5.3 (kg/cm ²) OFF : 3.5 - 4.1		
2-3 Full load delivery	1,100	51.8 - 52.8 (cc/1,000st)		
2-4 Idle speed regulation	350	5.3 - 9.3 (cc/1,000st)		2.0
2-5 Start	100	45.0 - 80.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,350	31.0 - 35.0 (cc/1,000st)		
2-7				
2-8				
2-9				

3. Test Specifications

3. Test Specifications	Solenoid Timer	ON		OFF		
		N = rpm	mm	1,100	1,700	2,550
3-1 Timing device			3.8 - 4.8	2.3 - 2.9	4.3 - 5.5	6.8 - 7.8
3-2 Supply pump		N = rpm	1,100 - 1,700	1,100	1,700	2,150
		kg/cm ²	4.5 - 5.3	5.7 - 6.7	3.5 - 4.1	4.9 - 5.5
3-3 Overflow delivery		N = rpm	1,100	-1,100 (without O-ring)		
		cc/10s	43.0 - 87.0	60 - 103		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,100	51.3 - 53.3		
	600	50.9 - 54.9		
	2,150	40.9 - 45.1		
	2,350	30.5 - 35.5		
	2,550	6.6 - 13.6		
	2,700	Below 5.0		
Switch OFF Magnet valve	350	0		
Idling	350	5.3 - 9.3		
	450	Below 3.0		

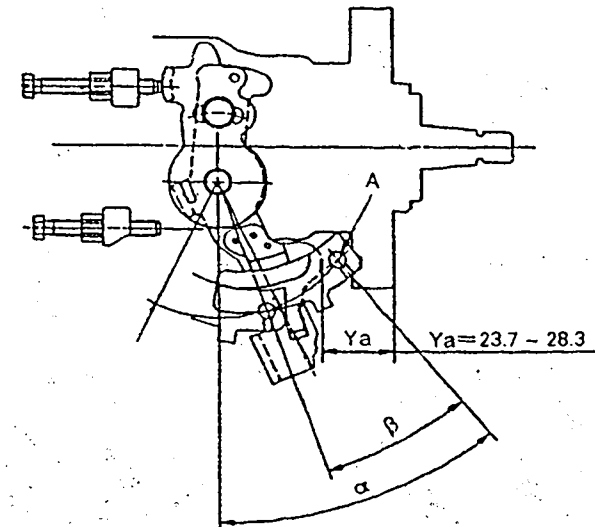
4. Dimensions

K	3.2 - 3.4	mm
KF	5.7 - 5.9	mm
MS	0.8 - 1.0	mm
BCS	—	mm
Pre-stroke	—	mm
Control lever angle		
α	50.0 - 58.0	deg
Ya	23.7 - 28.3	mm
β	37.0 - 47.0	deg
B	10.7 - 14.8	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 - 14V

Control Lever Angle Measurement Position

- ① Measure the control lever angles (α , β , γ) at hole A.



○ Note

- If there is no designation in the specifications for the Solenoid Timer's ON-OFF position, then the position should be regarded as OFF.

■ Accelerator Switch Adjustment

1. Insert a block gauge of 5.2 ± 0.13 mm thickness between the idling stopper bolt and the control lever. (Control lever angle: $8^\circ \pm 2$)
2. Then, adjust the installation position of the accelerator switch so that it is turned OFF.

INJ. PUMP CALIBRATION DATA

TEST OIL: ISO 4113 or SAE J967d
 ENGINE MODEL : 4JB1-PK
 Injection pump No.: 104641-1113 (NP-VE4/11F1300LNP387)
 Pump rotation : Counter clockwise-viewed from drive side

BOSCH No. 9 460 610 345
 DKKC No. 104741-1193
 Date : 10, April, 1989
 Company : ISUZU
 No. 894404 0322

For Test Condition see
 Microfiche No. WP-210 (N-16)

1. Test Conditions

- | | |
|--|---|
| 1-1 Nozzle : 105780-0000 (NP-DN12SDi2T) | 1-4 Injection pipe : 2 x 6 x 840 mm |
| 1-2 Nozzle holder : 105780-2080 (EF8511/9) | 1-5 Fuel oil temperature : 45 ⁺⁵ °C |
| 1-3 Nozzle opening pressure : 150 ⁻⁵ kg/cm ² | 1-6 Supply pump pressure : 0.2 kg/cm ² |

2. Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,400	0 (mm)		
2-2 Supply pump pressure	800	2.6 ~ 3.0 (kg/cm ²)		
2-3 Full load delivery	800	49.0 ~ 50.0 (cc/1,000st)		3.5
2-4 Idle speed regulation	375	7.6 ~ 11.6 (cc/1,000st)		2.0
2-5 Start	100	75.0 ~ 115.0 (cc/1,000st)		
2-6 Full-load speed regulation	1,400	18.9 ~ 24.9 (cc/1,000st)		4.5
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm mm	1,400 0		
3-2 Supply pump	N = rpm kg/cm ²	600 1.8 ~ 2.4	800 2.6 ~ 3.0	1,300 4.4 ~ 5.0
3-3 Overflow delivery	N = rpm cc/10s	800 30.0 ~ 73.3		

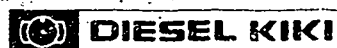
3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. spec	800	48.5 ~ 50.5		
	500	54.3 ~ 62.4		
	700	46.6 ~ 51.6		
	1,000	46.6 ~ 51.6		
	1,300	48.1 ~ 54.1		
	1,350	43.2 ~ 52.2		
	1,400	18.4 ~ 25.5		
1,450	Below 5.0			
Switch OFF Magnet valve	500	0		
Idling	500	7.6 ~ 11.6		
	600	Below 3.0		

4. Dimensions

K	2.7 ~ 2.9	mm
KF	4.9 ~ 5.1	mm
MS	0.9 ~ 1.1	mm
BCS	—	mm
Pre-stroke	0.43 ~ 0.47	mm
Control lever angle		
α	14.0° ~ 22.0°	deg
A	2.5 ~ 7.6	mm
β	31.5° ~ 41.5°	deg
B	9.2 ~ 13.0	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V



DIESEL KIKI CO., LTD.
 Service Department

3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN
 Tel. (03)5485-4135 Fax: (03)797-6069

INJ. PUMP CALIBRATION DATA

TEST OIL: ENGINE MODEL : R2
 ISO 4113 or
 SAE J967d

Injection pump No.: 104648-0212 [NP-VE4/8F2125RNP286]
 Pump rotation : Clockwise-viewed from drive side

BOSCH No. 9 460 610 342 1/4
 DKKC No. 104748-0212
 Date : 10, April 1989
 Company : MAZDA
 No. R234138008

For Test Condition see
 Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105780-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150⁺⁵ kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45⁺⁵ °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting

	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,250	3.3 ~ 3.7 (mm)	-140	2.5
2-2 Supply pump pressure	1,250	4.9 ~ 5.5 (kg/cm ²)		
2-3 Full load delivery	1,500	38.2 ~ 39.2 (cc/1,000st)		
2-4 Idle speed regulation	350	6.0 ~ 10.0 (cc/1,000st)	-140	2.0
2-5 Start	100	Above 42 (cc/1,000st)		
2-6 Full-load speed regulation	2,400	11.1 ~ 15.1 (cc/1,000st)	-140	4.0
2-7 Load-timer adjustment	1,250	2.7 ± 0.2 (mm)		
2-8 ACS adjustment	1,500	33.1 ~ 35.1 (cc/1,000st)		
2-9				

3. Test Specifications

3-1 Timing device	N = rpm	1,250	1500	2,125
	mm	3.2 ~ 3.8	4.1 ~ 5.3	7.0 ~ 8.2
3-2 Supply pump	N = rpm	500	1,250	2,125
	kg/cm ²	2.7 ~ 3.3	4.9 ~ 5.5	7.3 ~ 7.9
3-3 Overflow delivery	N = rpm	1,250		
	cc/10s	49.7 ~ 93.7		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. speed	1,500	37.7 ~ 39.7	-140	
	500	30.7 ~ 34.7		
	1,250	36.0 ~ 40.0		
	2,125	32.0 ~ 36.0		
	2,400	10.1 ~ 16.1		
	2,500	Below 4.0		
Switch OFF Magnet valve	350	0		
Idling	350	6.0 ~ 10.0		
	450	Below 4.0		

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.4 ~ 1.6	mm
BCS	-	mm
Pre-stroke	-	mm
Control lever angle		
α	26.0 ~ 34.0	deg
A	4.0 ~ 9.4	mm
β	40.0 ~ 50.0	deg
B	12.5 ~ 15.8	mm
γ	-	deg
C	-	mm

LOAD TIMER ADJUSTMENT

1) Adjustment

① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : - mmHg

Pump Speed : 1250 rpm

Fuel Injection : 28.2 ± 1 cc/1000st
 Quantity

② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values (2 - 7).

2) Confirmation of Timer Characteristics

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump Speed (rpm)	Fuel Injection Quantity (cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	28 ± 1.5	-	2.7 ± 0.3	-
1250	18 ± 1.5	-	1.5 ± 0.7	-

■ M-CSD Assembly and Adjustment

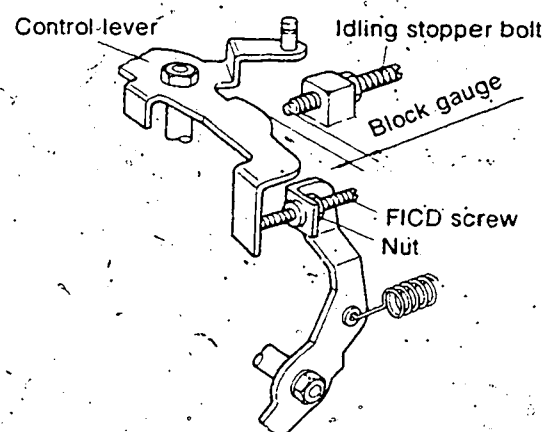
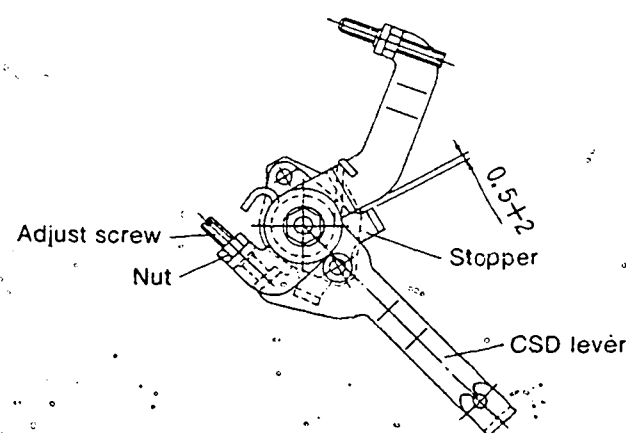
1) Fixing the M-CSD stopper

1. Fix the M-CSD assembly temporarily to the pump housing.
2. Turn the drive shaft at least two turns in the direction of pump rotation.
3. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc).
4. Move the CSD lever to the advance side.
5. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
6. Adjust using the adjusting screw so that the gap between the CSD lever and the stopper is 0.5 ± 2 mm.
7. After adjustment, tighten the M-CSD screw to the specified torque.

$$T = 0.6 - 0.9 \text{ kg} \cdot \text{m}$$

2) FICD screw adjustment

1. Move the CSD lever so that it contacts the stopper.
2. Insert a block gauge (thickness gauge) of 4.8 ± 0.1 mm thickness between the control lever and idling stopper bolt. (Position 7° from idle)
3. Adjust using the FICD screw so that the control lever and FICD screw are in contact.



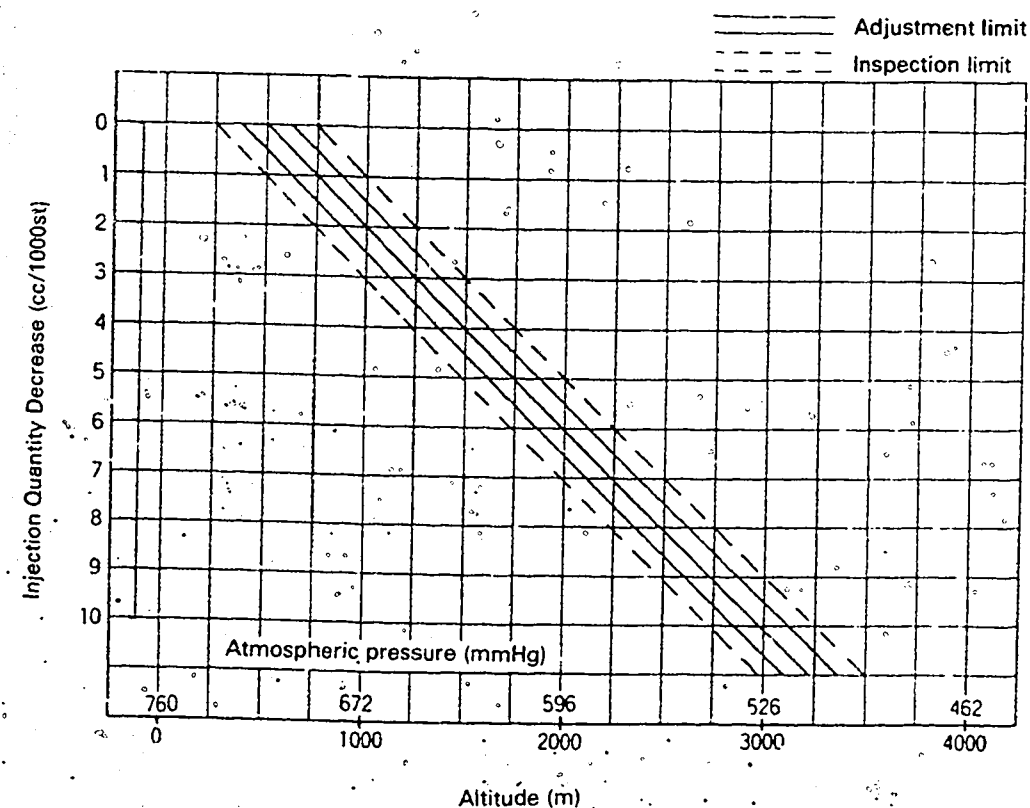
■ FULL-LOAD FUEL INJECTION QUANTITY AND ACS ADJUSTING PROCEDURE AT HIGH ALTITUDES

1) FULL-LOAD FUEL INJECTION QUANTITY ADJUSTMENT

- ① Remove the ACS cover, the bellows and the adjusting shims.
- ② Perform all adjustments as described in the adjusting specifications, except for ACS adjustment.

2) ACS ADJUSTMENT

- ① Attach the ACS cover, the bellows and the adjusting shims.
- ② At a pump speed of 1500 rpm and referring to the graph below, use the shims to adjust the fuel injection quantity decrease quantity according to the altitude.



INJ. PUMP CALIBRATION DATA

1/4

104748-2411 2/4

TEST OIL: ISO 4113 or SAE J967d
ENGINE MODEL : CD17

BOSCH No. 9 460 610 333
DKKC No. 104748-2411
Date : 10, April 1989
Company : NISSAN
No. 16700 54A00

Injection pump No.: 104648-2411 [NP-VE4/8F2500LNP374]
Pump rotation : Counter clockwise-viewed from drive side

For Test Condition see Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105780-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150⁺⁵ kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45⁺⁵ °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting

	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,200	1.5 ~ 2.1 (mm)		2.5
2-2 Supply pump pressure	1,200	3.1 ~ 3.7 (kg/cm ²)		
2-3 Full load delivery	1,000	27.1 ~ 29.1 (cc/1,000st)		
2-4 Idle speed regulation	360	3.7 ~ 6.7 (cc/1,000st)		
2-5 Start	100	50.3 ~ 60.3 (cc/1,000st)		
2-6 Full-load speed regulation	2,700	11.8 ~ 17.8 (cc/1,000st)		
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm mm	1,200 1.4 ~ 2.2	1,800 3.5 ~ 4.7	2,500 6.9 ~ 7.8
3-2 Supply pump	N = rpm kg/cm ²	1,200 3.0 ~ 3.8	1,800 4.4 ~ 5.2	2,500 6.1 ~ 6.9
3-3 Overflow delivery	N = rpm cc/10s	1,200 36.0 ~ 80.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	2,900	Below 6.0		
	2,700	11.3 ~ 18.3		
	2,500	24.3 ~ 28.3		
	1,000	26.6 ~ 28.6		
	600	24.8 ~ 28.8		
Switch OFF Magnet valve	360	0		
Idling	360	3.2 ~ 7.2		2.5
	600	Below 3.0		
Partial load	700	10.8 ~ 19.8		

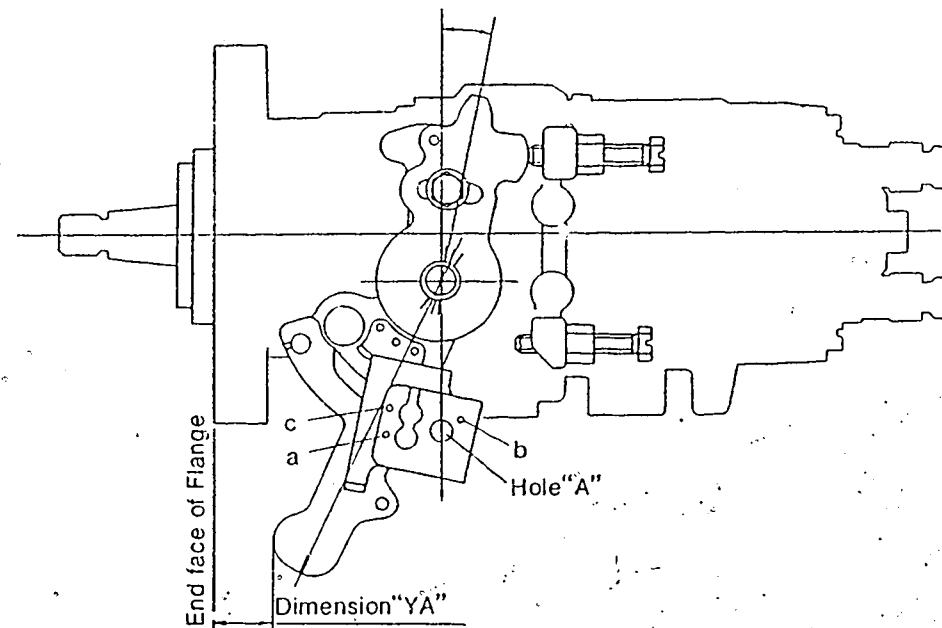
3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.5 ~ 1.7	mm
BCS	—	mm
Pre-stroke	—	mm
Control lever angle		
α	1.0° ~ -1.0°	deg
A	15.4 ~ 18.1	mm
β	39.0° ~ 49.0°	deg
B	11.0 ~ 16.0	mm
γ	13.5° ~ 14.5°	deg
C	8.6 ~ 9.2	mm

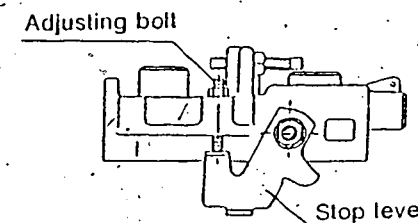
○Control Lever Angle Measurement Position

①Measure the control lever angle (α, β, γ) at hole A.



○Starting Injection Quantity Adjustment

Adjust the starting Injection Quantity (item 2 - 5) using the adjusting bolt (as shown in the figure at below)



OW-CSD Adjustment

1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

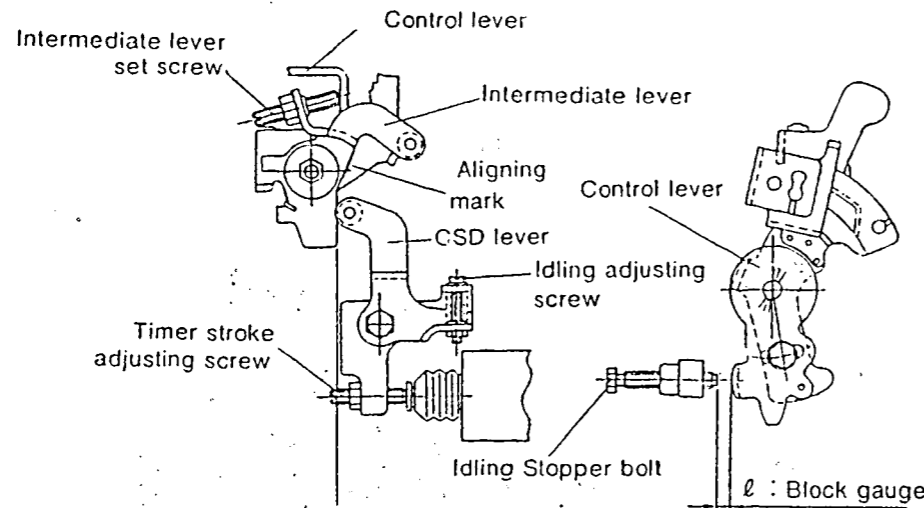


Fig. 1

- Formula for calculating Fig. 2: $10 \leq t \leq 20 \quad T = -0.027t + 1.09$
- Formula for calculating timer stroke: $20 \leq t \leq 40 \quad T = -0.0275t + 1.1$
- Formula for calculating control lever and idling stopper bolt gap:
- $t \leq 10 \quad \ell = 4.6$
 - $10 < t \leq 20 \quad \ell = -0.17t + 6.3$
 - $20 < t \leq 28.5 \quad \ell = -0.235t + 7.6$
 - $28.5 < t \leq 36 \quad \ell = -0.129t + 4.32$

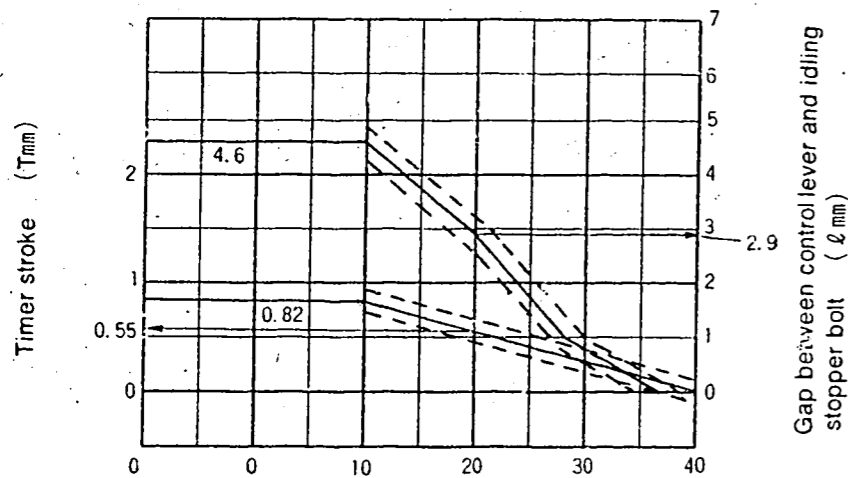


Fig. 2

2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of 4.1 ± 0.05 mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

3) CSD lever adjustment

1. Calculate the block gauge dimension $\ell \pm 0.05$ mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) selected in Step(1) above between the bracket and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

Note:

1. The temperature of the wax must be below 30°C when adjusting.
2. When inserting a block gauge (thickness gauge) between the control lever (beacket) and the idling stopper bolt, use the idling adjusting bolt to separate the CSD lever and intermediate lever so that no excessive force is exerted on them.

INJ. PUMP CALIBRATION DATA

1/4

104748—2421 2/4

TEST OIL: IS O 4113 or SAE J967d
ENGINE MODEL : CD17

BOSCH No. 9 460 610 334
DKKC No. 104748-2421
Date : 10, April 1989 [2]
Company : NISSAN
No. 16700 54A10

Injection pump No.: 104548-2411 [NP-VE4/8F2500LNP374]
Pump rotation : Counter clockwise viewed from drive side

For Test Condition see Microfiche No. WP-210 (N-16)

1. Test Conditions

- | | |
|--|---|
| 1-1 Nozzle : 105780-0000 (NP-DN12SD12T) | 1-4 Injection pipe : 2 x 6 x 840 mm |
| 1-2 Nozzle holder : 105780-2080 (EF8511/9) | 1-5 Fuel oil temperature : 45 ^{±5} °C |
| 1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ² | 1-6 Supply pump pressure : 0.2 kg/cm ² |

2. Setting		Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1	Timing device travel	1,200	1.5 ~ 2.1 (mm)		2.5
2-2	Supply pump pressure	1,200	3.1 ~ 3.7 (kg/cm ²)		
2-3	Full load delivery	1,000	27.1 ~ 29.1 (cc/1,000st)		
	Full load delivery		(cc/1,000st)		
2-4	Idle speed regulation	360	3.7 ~ 6.7 (cc/1,000st)		
2-5	Start	100	50.3 ~ 60.3 (cc/1,000st)		
2-6	Full-load speed regulation	2,700	11.8 ~ 17.8 (cc/1,000st)		
2-7					
2-8					
2-9					

3. Test Specifications

3-1 Timing device	N = rpm	1,200	1,800	2,500
	mm	1.4 ~ 2.2	3.5 ~ 4.7	6.9 ~ 7.8
3-2 Supply pump	N = rpm	1,200	1,800	2,500
	kg/cm ²	3.0 ~ 3.8	4.4 ~ 5.2	6.1 ~ 6.0
3-3 Overflow delivery	N = rpm	1,200		
	cc/10s	36.0 ~ 80.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. speed	2,900	Below 6.0		
	2,700	11.3 ~ 18.3		
	2,500	24.3 ~ 28.3		
	1,000	26.6 ~ 28.6		
	600	24.8 ~ 28.8		
Switch OFF Magnet valve	360	0		
Idling	360	3.2 ~ 7.2		2.5
	600	Below 3.0		
Partial load	700	10.8 ~ 19.8		

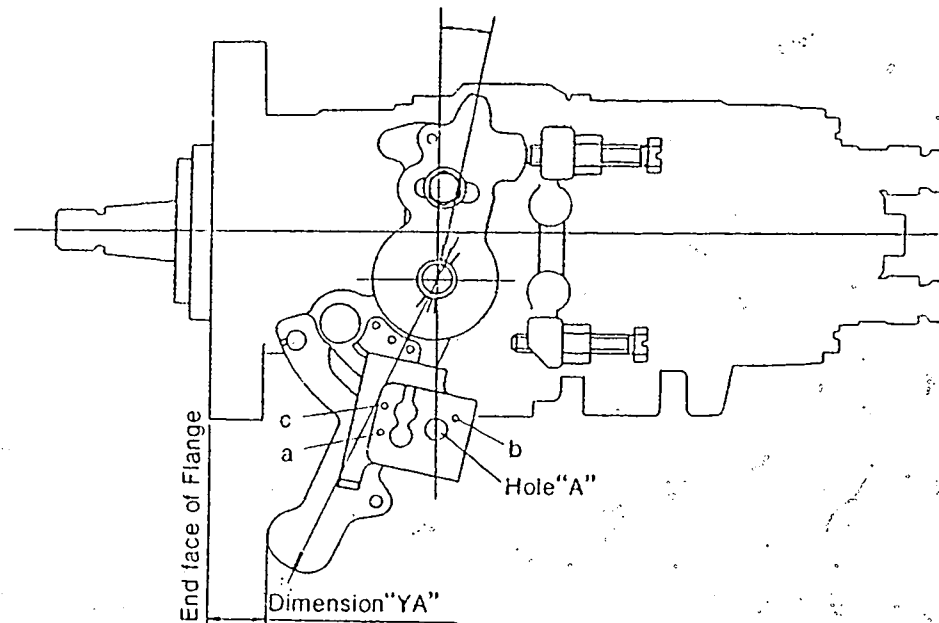
4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.5 ~ 1.7	mm
BCS	—	mm
Pre-stroke	—	mm
Control lever angle		
α	1.0° ~ -1.0°	deg
A	15.4 ~ 18.1	mm
β	39.0° ~ 49.0°	deg
B	11.0 ~ 16.0	mm
γ	13.5° ~ 14.5°	deg
C	8.6 ~ 9.2	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

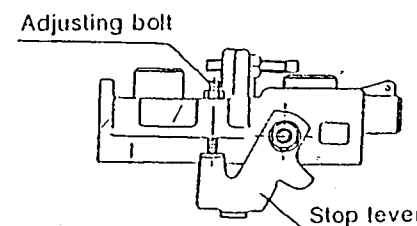
○Control Lever Angle Measurement Position

①Measure the control lever angle (α, β, γ) at hole A.



○Starting Injection Quantity Adjustment

Adjust the starting Injection Quantity (item 2-5) using the adjusting bolt (as shown in the figure at below)



OW-CSD Adjustment

1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

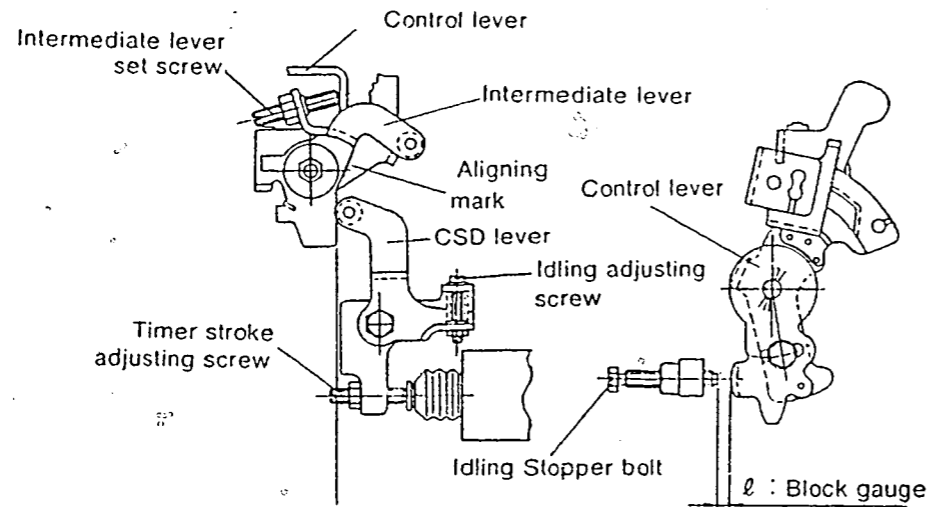


Fig. 1

Formula for calculating Fig. 2 $10 \leq t \leq 20$ $T = -0.027t + 1.09$

Formula for calculating timer stroke: $20 \leq t \leq 40$ $T = -0.0275t + 1.1$

Formula for calculating control lever $t \leq 10$ $l = 4.6$

and idling stopper bolt gap: $10 < t \leq 20$ $l = -0.17t + 6.3$

$20 < t \leq 28.5$ $l = -0.235t + 7.6$

$28.5 < t \leq 36$ $l = -0.12t + 4.32$

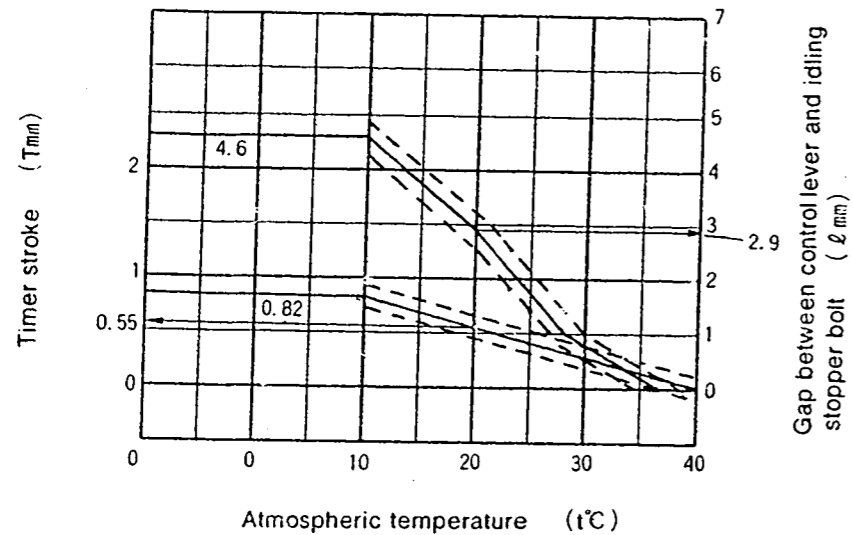


Fig. 2

2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of 4.1 ± 0.05 mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

3) CSD lever adjustment

1. Calculate the block gauge dimension $l \pm 0.05$ mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) selected in Step(1) above between the bracket and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

Note:

1. The temperature of the wax must be below 30°C when adjusting.
2. When inserting a block gauge (thickness gauge) between the control lever (becket) and the idling stopper bolt, use the idling adjusting bolt to separate the CSD lever and intermediate lever so that no excessive force is exerted on them.

INJ. PUMP CALIBRATION DATA

1/4

TEST OIL:
ISO 4113 or
SAE J967d

ENGINE MODEL : PN

BOSCH No. 9 460 610 355

DKKC No. 104749-0460

Date : 10, April 1989

Company : MAZDA

No. PN2613800

104749-0460 2/4

Injection pump No.: 104649-G343 (NP-VE4/9F2350RNP540)
Pump rotation : Clockwise-viewed from drive side

For Test Condition see
Microfiche No. WP-210 (N-16)

1. Test Conditions

1-1 Nozzle : 105780-0000 (NP-DN12SD12T)	1-4 Injection pipe : 2 x 6 x 840 mm
1-2 Nozzle holder : 105780-2080 (EF8511/9)	1-5 Fuel oil temperature : 45 ^{±5} °C
1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ²	1-6 Supply pump pressure : 0.2 kg/cm ²

2. Setting

	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,500	3.7 ~ 4.1 (mm)		
2-2 Supply pump pressure	1,500	4.4 ~ 5.0 (kg/cm ²)		2.5
2-3 Full load delivery	1,500	32.5 ~ 33.5 (cc/1,000st)		2.0
2-4 Idle speed regulation	410	5.0 ~ 7.0 (cc/1,000st)		
2-5 Start	100	55.0 ~ 75.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,635	6.0 ~ 10.0 (cc/1,000st)		4.0
2-7 Load-timer Adjustment	1,500	3.0 ~ 3.4 (mm)		
2-8				
2-9				

3. Test Specifications

	N = rpm	1,000	1,500	2,000	2,350
3-1 Timing device	mm	1.2 ~ 2.0	3.6 ~ 4.2	5.6 ~ 6.8	7.2 ~ 8.2
3-2 Supply pump	kg/cm ²		4.4 ~ 5.0		6.8 ~ 7.4
3-3 Overflow delivery	cc/10s		53.0 ~ 97.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. speed	1,500	32.0 ~ 34.0		
	500	28.0 ~ 36.0		
	2,350	26.0 ~ 30.2		
	2,635	5.5 ~ 10.5		
	2,800	Below 3.0		
Switch OFF Magnet valve	410	0		
Idling	410	5.0 ~ 7.0		
	500	Below 3.0		

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.4 ~ 1.6	mm
BCS	—	mm
Pre-stroke	—	mm

Control lever angle

α	23° ~ 27°	deg
A	34.5 ~ 37.5	mm
β	38° ~ 48°	deg
B	11.9 ~ 15.2	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

LOAD TIMER ADJUSTMENT

1) Adjustment

① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg

Pump Speed : 1500 rpm

Fuel Injection : 28.9 ± 1 cc/1000st
Quantity

② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values (2 - 7)

2) Confirmation of Timer Characteristics

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1500	28.9 ± 1.5	—	3.2 ± 0.3	—
1500	19.9 ± 1.5	—	2.2 ± 0.5	—

■ Side Link Lever Adjustment

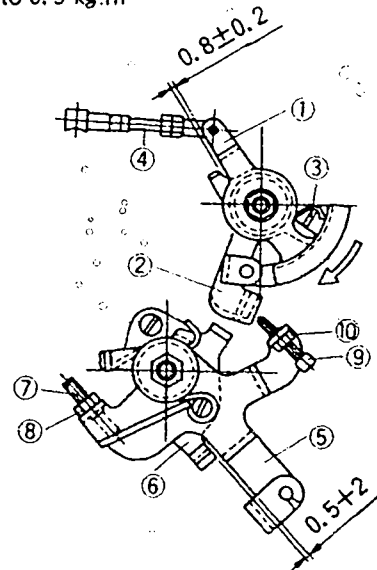
1) Side Link Lever Adjustment

1. Fix the control lever in the idling position.
2. Move the side link lever ② so that it contacts the stopper ③.
3. Rotate the side link lever ① gently in the direction of P so that the connecting rod ④ play is 0 mm.
4. Adjust the length of rod ④ so that the gap between the levers ① and ② is 0.8 ± 0.2 mm.
5. Tighten the two nuts on rod ④.

2) Fixing the M-CSD Stopper

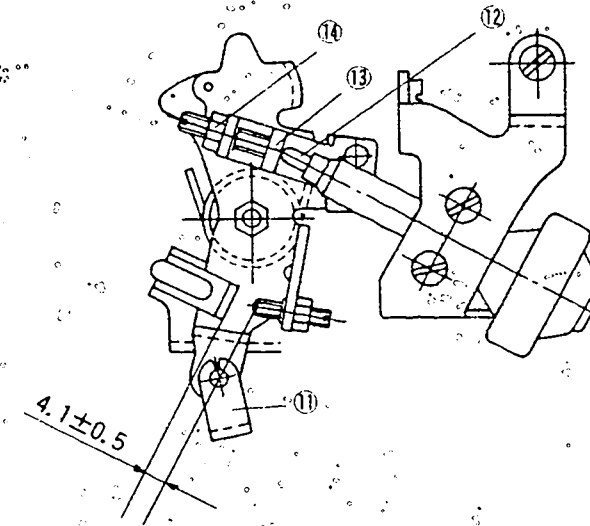
1. Fix the M-CSD assembly to the pump housing.
2. Turn the drive shaft at least two turns in the direction of pump rotation.
3. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disk).
4. Move the CSD lever to the advance side.
5. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
6. Adjust using the adjusting screw ⑦ so that the gap between the CSD lever ⑤ and the stopper ⑥ is 0.5 ± 2 mm.
7. After adjustment, tighten the nut ⑧ to the specified torque.

Tightening torque : 0.6 to 0.9 kg.m



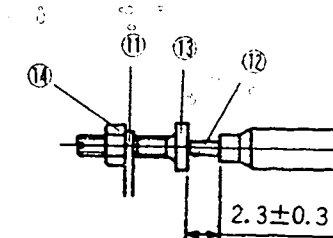
3) M-CSD Adjustment

1. Move the M-CSD lever ⑤ through its full stroke.
2. Adjust the screw ⑨ so that the gap between the control lever ⑪ and the idling adjusting bolt is 4.1 ± 0.5 mm, and then fix the screw ⑨ in this position.



■ DASHPOT ADJUSTMENT.

1. Fix the control lever (11) in the idling position.
2. Adjust the screw (13) so that the pushrod (12) protrudes 2.3 ± 0.3 mm.



INJ. PUMP CALIBRATION DATA

1/4

104749-2511 2/4

TEST OIL: ISO 4113 or SAE J967d
ENGINE MODEL : LD20

BOSCH No. 9 460 610 338
DKKC No. 104749-2511
Date : 10, April 1989
Company : NISSAN
No. 16700 D4601

Injection pump No.: 104649-2500 (NP-VE4/9F2500RNP728)
Pump rotation : Clockwise-viewed from drive side

For Test Condition see Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105780-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150^{±5} kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45^{±5} °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting		Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1	Timing device travel	900	1.3 ~ 1.7 (mm)		2.5
2-2	Supply pump pressure	900	3.2 ~ 3.8 (kg/cm ²)		
2-3	Full load delivery	900	32.5 ~ 33.5 (cc/1,000st)		
2-4	Idle speed regulation	350	4.7 ~ 7.7 (cc/1,000st)		
2-5	Start	100	40.0 ~ 60.0 (cc/1,000st)		
2-6	Full-load speed regulation	2,700	10.9 ~ 16.9 (cc/1,000st)		
2-7					
2-8					
2-9					

3. Test Specifications

3-1	Timing device	N = rpm	900	1,800	2,300
		mm	1.2 ~ 1.8	5.5 ~ 6.7	7.7 ~ 8.9
3-2	Supply pump	N = rpm	900	1,800	2,500
		kg/cm ²	3.1 ~ 3.9	5.1 ~ 5.9	6.8 ~ 7.6
3-3	Overflow delivery	N = rpm	900		
		cc/10s	35.0 ~ 79.0		

3-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	900	32.0 ~ 34.0		
	600	31.2 ~ 35.2		
	2,300	30.6 ~ 34.6		
	2,700	10.4 ~ 17.4		
	2,800	Below 6.0		
Switch OFF Magnet valve	350	0		
Idling	350	4.2 ~ 8.2		2.2
	500	Below 4.5		
Partial load	900	4.1 ~ 14.1		

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.1 ~ 1.3	mm
BCS	—	mm
Pre-stroke	—	mm
Control lever angle		
α	21.0° ~ 29.0°	deg
A	7.6 ~ 11.7	mm
β	39.0° ~ 49.0°	deg
B	11.9 ~ 15.6	mm
γ	10.5° ~ 11.5°	deg
C	5.5 ~ 6.1	mm

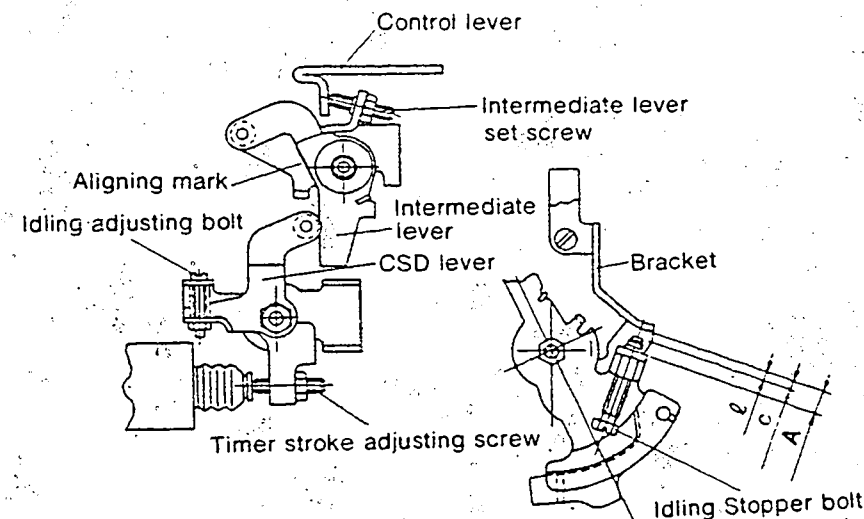
○W—CSD Adjustment

1) Timer stroke adjustment (adjust to the thick line)

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of 0.25 ± 0.05mm thickness between the bracket and the idling stopper bolt.
2. Aling the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.



Formula for calculating Fig. 2

Formula for calculating timer stroke: $T = -0.0367t + 1.424$

Formula for calculating control lever
and idling stopper bolt gap: $g = -0.095t + 3.6$

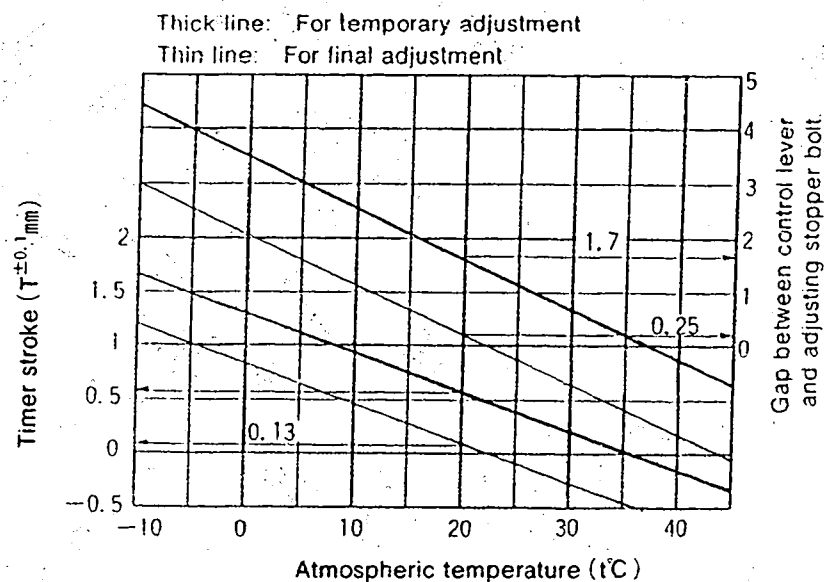


Fig. 2

3) CSD lever adjustment

1. Calculate the block gauge dimension $g \pm 0.05\text{mm}$ from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) selected in Step(1) above between the bracket and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

4) Final adjustment

After completing the adjustment, screw the timer stroke adjusting screw two turns clockwise.

(Move from the temporary adjustment chart to the final adjustment chart.)

※ This W-CSD's timer stroke operations are effective at atmospheric temperatures of 27°C or above.

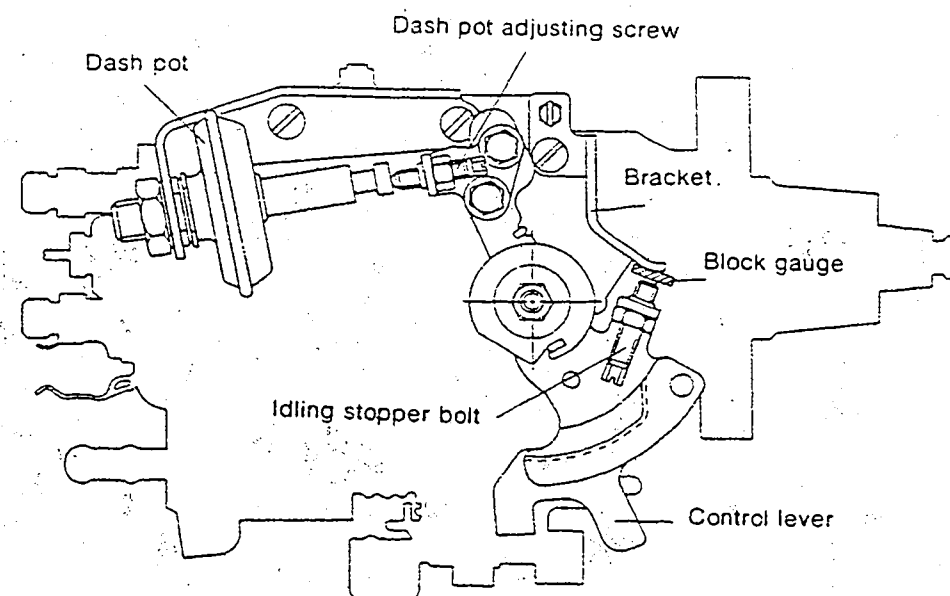
Therefore, to make adjustment at normal temperatures possible, after adjusting to the substitute characteristics, tighten the time stroke adjusting screw two turns.

Note:

1. The temperature of the wax must be below 30°C when adjusting.
2. When inserting a block gauge (thickness gauge) between the control lever (beacket) and the idling stopper bolt, use the idling adjusting bolt to separate the CSD lever and intermediate lever so that no excessive force is exerted on them.

○ DASH POT ADJUSTMENT

- ① Insert a block gauge (thickness gauge) of thickness 3.8 ± 0.05 in the gap between the control lever and the bracket.
- ② With the control lever positioned as described in ① above, adjust the Dashpot adjusting screw so that the Dashpot adjusting screw and the push rod are in contact. Fix using the nut.



INJ. PUMP CALIBRATION DATA

TEST OIL: ENGINE MODEL : 4D65
 ISO 4113 or
 SAE J967d

Injection pump No.: 104649-3080 [NP-VE4/9F2250RNP421]
 Pump rotation : Clockwise-viewed from drive side

BOSCH No. 9 460 610 340
 DKKC No. 104749-3121
 Date : 10, April 1989
 Company : MITSUBISHI
 No. MD118093

For Test Condition see
 Microfiche No. WP-210 (N-16)

1. Test Conditions

- 1-1 Nozzle : 105780-0000 (NP-DN12SD12T)
- 1-2 Nozzle holder : 105780-2080 (EF8511/9)
- 1-3 Nozzle opening pressure : 150^{-5} kg/cm²
- 1-4 Injection pipe : 2 x 6 x 840 mm
- 1-5 Fuel oil temperature : 45^{±5} °C
- 1-6 Supply pump pressure : 0.2 kg/cm²

2. Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,750	6.3 ~ 6.7 (mm)		
2-2 Supply pump pressure	1,250	4.5 ~ 5.1 (kg/cm ²)		
2-3 Full load delivery	1,250	33.2 ~ 34.2 (cc/1,000st)		3.0
2-4 Idle speed regulation	375	5.0 ~ 8.0 (cc/1,000st)		2.0
2-5 Start	100	43.0 ~ 63.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,750	8.1 ~ 14.1 (cc/1,000st)		2.0
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm	750	1,750	2,375
	mm	0.9 ~ 1.9	6.1 ~ 6.9	8.8 ~ 10.0
3-2 Supply pump	N = rpm	600	1,250	2,250
	kg/cm ²	2.9 ~ 3.5	4.5 ~ 5.1	6.8 ~ 7.4
3-3 Overflow delivery	N = rpm		1,250	
	cc/10s		48.0 ~ 92.0	

3-4 Fuel injection quantities	Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed		1,250	32.7 ~ 34.7		
		600	26.7 ~ 30.7		
		750	26.9 ~ 30.9		
		1,750	30.7 ~ 34.7		
		2,250	27.8 ~ 31.8		
		2,375	Above 27.0		
		2,750	6.1 ~ 16.1		
Switch OFF Magnet valve		375	0		
Idling		375	4.5 ~ 8.5		
		600	Below 3.0		

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.3 ~ 1.5	mm
BCS	—	mm
Pre-stroke	—	mm
Control lever angle		
α	55.0° ~ 63.0°	deg
A	10.5 ~ 16.0	mm
β	38.0° ~ 46.0°	deg
B	10.5 ~ 15.0	mm
γ	—	deg
C	—	mm

W-CSD ADJUSTMENT

1) Timer Stroke Adjustment (Refer to Fig. 1, 2)

- ① Using the graph (Fig 2), determine the timer stroke according to the atmospheric temperature at the time of adjustment.
- ② Adjust using the timer stroke adjusting bolt so that the timer stroke corresponds to the value determined in note ① above.

2) Fast Idle Adjustment (Refer to Fig. 1, 2)

- ① Insert a block gauge of 5.3 ± 0.05 mm thickness in the gap between the control lever and the idling stopper bolt.
- ② From Fig. 2 determine the dimension of the gap between the idling lever pin and the control lever according to the atmospheric temperature at the time of adjustment.
- ③ Adjust using the fast idle adjusting screw so that the gap corresponds to the value determined in note 2) ② above.

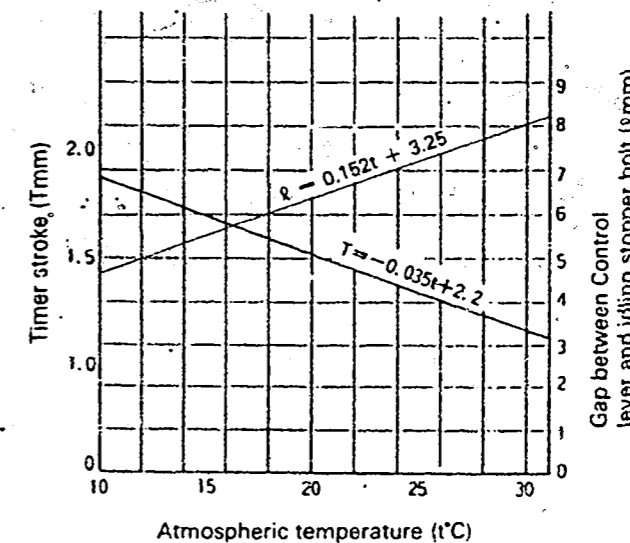
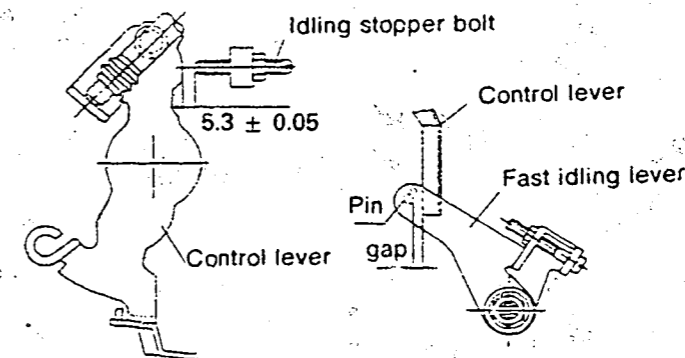
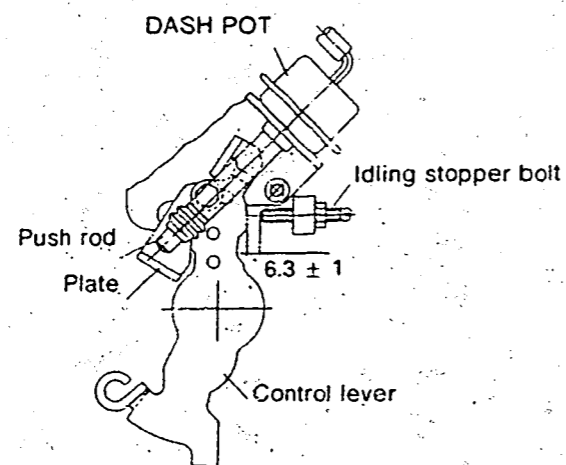


Fig. 2

104749-3121 3/3

■ DASH POT ADJUSTMENT

- ① Insert a block gauge (thickness gauge) of thickness 6.3 ± 1 mm in the gap between the control lever and the idling stopper bolt (control lever angle: $8^\circ \sim 12^\circ$).
- ② With the control lever positioned as described in ① above, adjust the plate's position so that the control lever plate and the dash pot push rod are in contact.



INJ. PUMP CALIBRATION DATA

TEST OIL:
ISO 4113 or
SAE J967d

ENGINE MODEL : 4FD1

BOSCH No. 9 460 610 353

DKKC No. 104749-5080

Date : 10, April 1989 [0]

Company : ISUZU

No. 894331 4661

Injection pump No.: 104649-5080 [NP-VE4/9F2250RNP220]

Pump rotation : Clockwise-viewed from drive side

For Test Condition see
Microfiche No. WP-210 (N-16)

1. Test Conditions

- | | |
|---|---|
| 1-1 Nozzle : 105780-0000 (NP-DN12SD12T) | 1-4 Injection pipe : 2 x 6 x 840 mm |
| 1-2 Nozzle holder : 105780-2080 (EF8511/9) | 1-5 Fuel oil temperature : 45 [±] °C |
| 1-3 Nozzle opening pressure : 150 [±] kg/cm ² | 1-6 Supply pump pressure : 0.2 kg/cm ² |

2. Setting

	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,250	3.4 ~ 3.8 (mm)		
2-2 Supply pump pressure	1,250	4.6 ~ 5.0 (kg/cm ²)		
2-3 Full load delivery	1,250	35.3 ~ 36.3 (cc/1,000st)		3.0
2-4 Idle speed regulation	340	5.6 ~ 9.6 (cc/1,000st)		2.0
2-5 Start	100	50.0 ~ 70.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,600	13.1 ~ 19.1 (cc/1,000st)		4.5
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm	1,250	2,000	2,500
	mm	3.3 ~ 3.9	6.3 ~ 7.5	8.6 ~ 9.4
3-2 Supply pump	N = rpm	1,250	2,000	2,500
	kg/cm ²	4.6 ~ 5.0	6.2 ~ 6.8	7.6 ~ 8.2
3-3 Overflow delivery	N = rpm	1,250		
	cc/10s	55.0 ~ 98.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,250	34.8 ~ 36.8		
	600	28.8 ~ 32.8		
	2,250	31.2 ~ 35.4		
	2,600	12.6 ~ 19.6		
	2,900	Below 4.5		
Switch OFF Magnet valve	340	0		
Idling	340	5.6 ~ 9.6		
	450	0		

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.5 ~ 1.7	mm
BCS	—	mm
Pre-stroke	0.23 ~ 0.27	mm
Control lever angle		
α	-7° ~ 1°	deg
A	8.8 ~ 11.4	mm
β	32.0° ~ 42.0°	deg
B	10.2 ~ 13.5	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V

INJ. PUMP CALIBRATION DATA

TEST OIL: ISO 4113 or SAE J967d
ENGINE MODEL: 4FD1

BOSCH No. 9 460 610 346

DKKC No. 104749-6661

Date: 10, April 1989

Company: ISUZU

No. 894468 5950

For Test Condition see Microfiche No. WP-210 (N-16)

Injection pump No.: 104649-1721 (NP-VE4/9F2250RNP373)
Pump rotation: Clockwise-viewed from drive side

1. Test Conditions

- | | |
|--|---|
| 1-1 Nozzle : 105780-0000 (NP-DN12SD12T) | 1-4 Injection pipe : 2 x 6 x 840 mm |
| 1-2 Nozzle holder : 105780-2080 (EF8511/9) | 1-5 Fuel oil temperature : 45 ^{±5} °C |
| 1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ² | 1-6 Supply pump pressure : 0.2 kg/cm ² |

2. Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,250	3.4 ~ 3.8 (mm)		
2-2 Supply pump pressure	1,250	4.6 ~ 5.0 (kg/cm ²)		
2-3 Full load delivery	1,250	37.2 ~ 38.2 (cc/1,000st)		3.0
2-4 Idle speed regulation	340	5.6 ~ 9.6 (cc/1,000st)		2.0
2-5 Start	100	50.0 ~ 70.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,600	13.1 ~ 19.1 (cc/1,000st)		4.5
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm	1,250	2,000	2,500
	mm	3.3 ~ 3.9	6.3 ~ 7.5	8.6 ~ 9.4
3-2 Supply pump	N = rpm	1,250	2,000	2,500
	kg/cm ²	4.6 ~ 5.0	6.2 ~ 6.3	7.6 ~ 8.2
3-3 Overflow delivery	N = rpm	1,250		
	cc/10s	58.0 ~ 102.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. speed	1,250	36.7 ~ 38.7		
	600	30.7 ~ 34.7		
	2,250	33.1 ~ 37.3		
	2,600	12.6 ~ 19.6		
	2,900	Below 4.5		
Switch OFF Magnet valve	340	0		
Idling	340	5.6 ~ 9.6		
	450	0		

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.5 ~ 1.7	mm
BCS	—	mm
Pre-stroke	0.23 ~ 0.27	mm
Control lever angle		
α	-2.0° ~ 6.0°	deg
A	8.5 ~ 11.1	mm
β	40.0° ~ 50.0°	deg
B	12.8 ~ 16.1	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 12V, Test voltage:



DIESEL KIKI CO., LTD.

Service Department

3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN

Tel. (03)5485-4135 · Fax: (03)787-6069

INJ. PUMP CALIBRATION DATA

TEST OIL: IS O 4113 or SAE J967d
ENGINE MODEL : 4FD1

BOSCH No. 9 460 610 347

DKKC No. 104749-6671

Date : 10, April 1989

Company : ISUZU

No. 894468 5960

For Test Condition see
Microfiche No. WP-210 (N-16)

Injection pump No.: 104649-1721 [NP-VE4/9F2250RNP373]
Pump rotation : Clockwise-viewed from drive side

1. Test Conditions

- | | |
|--|---|
| 1-1 Nozzle : 105780-0000 (NP-DN12SD12T) | 1-4 Injection pipe : 2 x 6 x 840 mm |
| 1-2 Nozzle holder : 105780-2080 (EF8511/9) | 1-5 Fuel oil temperature : 45 ^{±5} °C |
| 1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ² | 1-6 Supply pump pressure : 0.2 kg/cm ² |

2. Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,250	3.4 ~ 3.8 (mm)		
2-2 Supply pump pressure	1,250	4.6 ~ 5.0 (kg/cm ²)		
2-3 Full load delivery	1,250	37.2 ~ 38.2 (cc/1,000st)		3.0
Full load delivery		(cc/1,000st)		
2-4 Idle speed regulation	340	5.6 ~ 9.6 (cc/1,000st)		2.0
2-5 Start	100	50.0 ~ 70.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,600	13.1 ~ 19.1 (cc/1,000st)		4.5
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm	1,250	2,000	2,500
	mm	3.3 ~ 3.9	6.3 ~ 7.5	8.6 ~ 9.4
3-2 Supply pump	N = rpm	1,250	2,000	2,500
	kg/cm ²	4.6 ~ 5.0	6.2 ~ 6.8	7.6 ~ 8.2
3-3 Overflow delivery	N = rpm	1,250		
	cc/10s	58.0 ~ 102.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,250	36.7 ~ 38.7		
	600	30.7 ~ 34.7		
	2,250	33.1 ~ 37.3		
	2,600	12.6 ~ 19.6		
	2,900	Below 4.5		
Switch OFF Magnet valve	340	0		
Idling	340	5.6 ~ 9.6		
	450	0		

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.5 ~ 1.7	mm
BCS	—	mm
Pre-stroke	0.23 ~ 0.27	mm
Control lever angle		
α	-2.0° ~ 6.0°	deg
A	8.5 ~ 11.1	mm
β	40.0° ~ 60.0°	deg
B	12.8 ~ 16.1	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 12V, Test voltage:

INJ. PUMP CALIBRATION DATA

TEST OIL :
ISO 4113 or
SAE J967d

ENGINE MODEL : 4FD1

BOSCH No. 9 460 610 348

DKKC No. 104749-6681

Date : 10, April 1989

Company : ISUZU

No. 894468 5970

For Test Condition see
Microfiche No. WP-210 (N-16)

Injection pump No.: 104649-1721 [NP-VE4/9F2250RNP373]
Pump rotation : Clockwise-viewed from drive side

1. Test Conditions

- | | |
|--|---|
| 1-1 Nozzle : 105780-0000 (NP-DN12SD12T) | 1-4 Injection pipe : 2 x 6 x 840 mm |
| 1-2 Nozzle holder : 105780-2080 (EF8511/9) | 1-5 Fuel oil temperature : 45 ^{±5} °C |
| 1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ² | 1-6 Supply pump pressure : 0.2 kg/cm ² |

2. Setting

	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,250	3.4 ~ 3.8 (mm)		
2-2 Supply pump pressure	1,250	4.6 ~ 5.0 (kg/cm ²)		
2-3 Full load delivery	1,250	35.3 ~ 36.3 (cc/1,000st)		3.0
2-4 Idle speed regulation	340	5.6 ~ 9.6 (cc/1,000:t)		2.0
2-5 Start	100	50.0 ~ 70.0 (cc/1,000:t)		
2-6 Full-load speed regulation	2,600	13.1 ~ 19.1 (cc/1,000st)		4.5
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm mm	1,250 3.3 ~ 3.9	2,000 6.3 ~ 7.5	2,500 8.6 ~ 9.4
3-2 Supply pump	N = rpm kg/cm ²	1,250 4.6 ~ 5.0	2,000 6.2 ~ 6.8	2,500 7.6 ~ 8.2
3-3 Overflow delivery	N = rpm cc/10s	1,250 55.0 ~ 98.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery (cc)
Max. speed	1,250	34.8 ~ 36.8		
	600	28.8 ~ 32.8		
	2,250	31.2 ~ 35.4		
	2,600	12.6 ~ 19.6		
	2,900	Below 4.5		
Switch OFF Magnet valve	340	0		
Idling	340	5.6 ~ 9.6		
	450	0		

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.5 ~ 1.7	mm
BCS	—	mm
Pre-stroke	0.23 ~ 0.27	mm
Control lever angle		
α	-2.0° ~ 6.0°	deg
A	8.5 ~ 11.1	mm
β	40.0° ~ 50.0°	deg
B	12.8 ~ 16.1	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V



DIESEL KIKI CO., LTD.
Service Department

3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN
Tel. (03)5485-4135 · Fax: (03)797-6069

INJ. PUMP CALIBRATION DATA

TEST OIL: ISO 4113 or SAE J967d
ENGINE MODEL : 4FD1

BOSCH No. 9 460 610 349

DKKC No. 104749-6691

Date : 10, April 1989

Company : ISUZU

No. 894468 5980

For Test Condition see Microfiche No. WP-210 (N-16)

Injection pump No.: 104649-1721 [NP-VE4/9F2250RNP373]
Pump rotation : Clockwise-viewed from drive side

1. Test Conditions

1-1 Nozzle : 105780-0000 (NP-DN12SD12T)	1-4 Injection pipe : 2 x 6 x 840 mm
1-2 Nozzle holder : 105780-2080 (EF8511/9)	1-5 Fuel oil temperature : 45 ^{±5} °C
1-3 Nozzle opening pressure : 150 ^{±5} kg/cm ²	1-6 Supply pump pressure : 0.2 kg/cm ²

2. Setting

Setting	Pump speed (rpm)	Settings	Charge air press (mmHg)	Difference in delivery (cc)
2-1 Timing device travel	1,250	3.4 ~ 3.8 (mm)		
2-2 Supply pump pressure	1,250	4.6 ~ 5.0 (kg/cm ²)		
2-3 Full load delivery	1,250	35.3 ~ 36.3 (cc/1,000st)		3.0
2-4 Idle speed regulation	340	5.6 ~ 9.6 (cc/1,000st)		2.0
2-5 Start	100	50.0 ~ 70.0 (cc/1,000st)		
2-6 Full-load speed regulation	2,600	13.1 ~ 19.1 (cc/1,000st)		4.5
2-7				
2-8				
2-9				

3. Test Specifications

3-1 Timing device	N = rpm	1,250	2,000	2,500
	mm	3.3 ~ 3.9	6.3 ~ 7.5	8.6 ~ 9.4
3-2 Supply pump	N = rpm	1,250	2,000	2,500
	kg/cm ²	4.6 ~ 5.0	6.2 ~ 6.8	7.6 ~ 8.2
3-3 Overflow delivery	N = rpm	1,250		
	cc/10s	55.0 ~ 98.0		

3-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press (mmHg)	Difference in delivery (cc)
Max. speed	1,250	34.8 ~ 36.8		
	600	28.8 ~ 32.8		
	2,250	31.2 ~ 35.4		
	2,600	12.6 ~ 19.6		
	2,900	Below 4.5		
Switch OFF Magnet valve	340	0		
Idling	340	5.6 ~ 9.6		
	450	0		

4. Dimensions

K	3.2 ~ 3.4	mm
KF	5.7 ~ 5.9	mm
MS	1.5 ~ 1.7	mm
BCS	—	mm
Pre-stroke	0.23 ~ 0.27	mm
Control lever angle		
α	-2.0° ~ +6.0°	deg
A	8.5 ~ 11.1	mm
β	40.0° ~ 50.0°	deg
B	12.8 ~ 16.1	mm
γ	—	deg
C	—	mm

3-5 Solenoid Max. cut-in voltage: 8V, Test voltage: 12 ~ 14V



DIESEL KIKI CO., LTD.
Service Department

3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN
Tel. (03)5485-4135 · Fax: (03)797-6069

Table of Contents (DKKC No. → BOSCH No.)

DKKC No.	BOSCH No.	Location	DKKC No.	BOSCH No.	Location
104135-1000	9 443 610 061	WP-218 B- 1			
104740-0333	9 460 610 339	WP-218 B- 2			
104740-1750	9 460 610 354	WP-218 B- 3			
104740-4733	9 460 610 337	WP-218 B- 4			
104740-7112	9 460 610 350	WP-218 B- 5			
104740-7230	9 460 610 351	WP-218 B- 6 ~ B- 7			
104740-7240	9 460 610 352	WP-218 B- 8			
104740-9723	9 460 610 343	WP-218 B- 9			
104740-9850	9 460 610 341	WP-218 B-10			
104740-9930	9 460 610 344	WP-218 B-11			
104741-1193	9 460 610 345	WP-218 B-12			
104748-0212	9 460 610 342	WP-218 B-13 ~ B-14			
104748-2411	9 460 610 333	WP-218 B-15 ~ B-16			
104748-2421	9 460 610 334	WP-218 C- 1 ~ C- 2			
104749-0460	9 460 610 355	WP-218 C- 3 ~ C- 4			
104749-2511	9 460 610 338	WP-218 C- 5 ~ C- 6			
104749-3121	9 460 610 340	WP-218 C- 7 ~ C- 8			
104749-5080	9 460 610 353	WP-218 C- 9			
104749-6661	9 460 610 346	WP-218 C-10			
104749-6671	9 460 610 347	WP-218 C-11			
104749-6681	9 460 610 348	WP-218 C-12			
104749-6691	9 460 610 349	WP-218 C-13			

Table of Contents (BOSCH No. → DKKC No.)

BOSCH No.	DKKC No.	Location	BOSCH No.	DKKC No.	Location
9 443 610 061	104135-1000	WP-218 B- 1			
9 460 610 333	104748-2411	WP-218 B-15 ~ B-16			
9 460 610 334	104748-2421	WP-218 C- 1 ~ C- 2			
9 460 610 337	104740-4733	WP-218 B- 4			
9 460 610 338	104749-2511	WP-218 C- 5 ~ C- 6			
9 460 610 339	104740-0333	WP-218 B- 2			
9 460 610 340	104749-3121	WP-218 C- 7 ~ C- 8			
9 460 610 341	104740-9850	WP-218 B-10			
9 460 610 342	104748-0212	WP-218 B-13 ~ B-14			
9 460 610 343	104740-9723	WP-218 B- 9			
9 460 610 344	104740-9930	WP-218 B-11			
9 460 610 345	104741-1193	WP-218 B-12			
9 460 610 346	104749-6661	WP-218 C-10			
9 460 610 347	104749-6671	WP-218 C-11			
9 460 610 348	104749-6681	WP-218 C-12			
9 460 610 349	104749-6691	WP-218 C-13			
9 460 610 350	104740-7112	WP-218 B- 5			
9 460 610 351	104740-7230	WP-218 B- 6 ~ B- 7			
9 460 610 352	104740-7240	WP-218 B- 8			
9 460 610 353	104749-5080	WP-218 C- 9			
9 460 610 354	104740-1750	WP-218 B- 3			
9 460 610 355	104749-0460	WP-218 C- 3 ~ C- 4			